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Exploring Food Handlers' Attitudes towards Food Safety in the Hospitality Industry

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Abstract

A study of 433 food handlers' beliefs and intended attitudes using a staff attitude questionnaire in 15 five star hotels and eight four star hotels is reported in terms of food safety training and knowledge related to ISO 22000 and HACCP systems. The study aims to investigate the impact of food safety training on improving food handlers' behaviors and knowledge. The majority of food handlers declared positive attitudes towards safe food handling, however results outlined that there are failures in the application of personal hygiene practices in both hotel categories. It has been also noted that there are significant correlations among effective food safety training and improving food safety knowledge and behaviors. Additionally, it has been revealed that there are no significant differences among: educational levels of food handlers and food handlers' work experience on one side and food safety behaviors on the other side. The results are discussed with regard to food safety training provided in the industry and its effect on enhancing food handlers' behaviors and knowledge perceived.

Keywords: Food safety; Food handlers; Food handlers' attitudes; Food safety training

Introduction

Food safety issues are a key concern in the hospitality industry and have been recognized as a source of competitive advantage (Johns, 1996; Arendt et al., 2013). Food service operations are continuously attempting to

improve their food quality and safety (Bharati and Berg, 2003) through training all staff members to establish a consistent standard for excellence service (Dittmer and Griffin, 1997). According to Knowles (2002) when investigating food poisoning outbreaks and enquiring about improper food handlers' practices observed, it is been emphasized that there were a lack of awareness in respect of basic food hygiene and the need for care and attention whilst handling foods. In order to reduce food-borne illness, it is crucial to let food handlers obtain more knowledge of the food safety practices undertaken in the food production area (Calyton and Driffith, 2004).

According to Bolton et al. (2008) there are approximately 3.2 million cases of acute gastroenteritis in Ireland annually and in the UK and the USA, 20% to 40% of such illness is associated with the consumption of food contaminated. In Europe and USA, approximately 22%, and 45% respectively of all foodborne illnesses have been attributed to food eaten in foodservice operations. In the USA, there are various reasons for general outbreaks, e.g. improper holding, poor personal hygiene, contaminated equipment and inadequate cooking which represent 60%, 31%, 26% and 18% of general outbreak respectively. According to Steffen's (2005) study, which investigated travelers from developed countries who visit developing countries, it was found that more than 60% might experience traveler's diarrhea, accounting for 40,000 travelers daily or more than 15 million travelers annually. It has been also noticed that five star hotels had a slightly higher traveler's diarrhea incidence rate, compared with four or three star hotels in developing countries involving Egypt. This is due to the fact that food items are more frequently prepared by hand in higher-end hotels. Additionally, the incidence rates of travelers' diarrhea (TD) from developed

countries to Egypt destination were 706 in 1979–1980, more than 500 in 1989–1991 in Nile cruises, and 257 in 1992. The travelers' diarrhea rate represented 20%, 10-90%, 59% of travelers from each period respectively. Incidence was calculated for a one-week stay. According to the American Chamber of Commerce in Egypt (2015), food safety levels in Egypt are dangerously low from both an international and domestic trade perspective and need to be improved.

Clinicians should report all suspected foodborne disease to public health authorities to ensure appropriate epidemiologic investigation (Jones and Angulo, 2006). Griffith (2006) emphasized that epidemiological data collection systems are critical to understand the nature and extent of the foodborne illnesses problem. For instance, Egypt typically reports only about three cases per 100,000 populations, whereas Sweden reports 5770. The difference is not due to better hygiene procedures, in fact, the contrary is true, but due to better maintaining of reporting and data collection.

Jones and Angulo (2006) indicated that approximately one-half of every dollar spent on food in the US is spent on food eaten in restaurants which represents an important source of infection. There is a critical need for an action considering preventing disease transmission within the food service operations. Thus, this study aims to explore the food safety knowledge and behavior for food handlers and the impact of food safety training on improving food handlers' behaviors and knowledge.

Literature Review

Food service is a critical component of the hotel industry (Hanson, 1984; Lattin, 1985; Kotas and Jayawardena, 1994; Siguaw and Enz, 2007) to

satisfy the needs and expectations of customers (Chon and Sparrowe, 2000) and enhancing a hotel's image and revenues (Minor and Cichy, 1984; Riley, 2005). According to Powers and Barrows (2003) and Bosselman (2007) food service in hotels is a marketing tool that provides a competitive advantage. The effective and workable food safety system includes critical success factors: (1) proper preparation and planning, (2) trained and educated people, (3) belief in the approach by all personnel, (4) and a shared commitment to food safety. This leads to positive attitudes towards food safety knowledge, practice and training (Mortimore, 2001).

Food handlers' attitudes to food safety

A food handler is identified as any person who handles food in the course of his or her work as part of his job description (Knowles, 2002) or "*any person involved in a food business who handles or prepares food whether open (unwrapped) or packaged (food includes ice and drinks)*" (Food Safety and Hygiene Working Group, 1997, p.9). A food handling represents any activity including which involves the food cycle starting from delivery through storage, preparation, cooking, chilling, reheating, serving, display and transportation (Sani and Siow, 2014). Food handlers play a significant role to ensure food safety throughout food production processes (Cortese, 2016).

In terms of investigating attitudes towards safe food handling in the hospitality industry, Coleman et al. (2000) found that the majority of caterers (96%) recognized that compliance with the food safety legislation would make caterers feel more confident about food safety. Moreover, 92% felt they were in the date of the study taking a more proactive approach to food safety than they were five years ago, and 93% felt that adherence to due-diligence procedures would reduce food poisoning. Additionally, Worsfold

and Worsfold (2005) reported in their study that the understanding of HACCP, hazards, risk and risk management was low, whilst after training there was a greater awareness of HACCP. According to Alberta Workforce Essential Skills and Alberta restaurant Food Service Association (2004), it is essential to update and notify food handlers of new regulations and food safety issues. In order to reduce the incidence of foodborne disease, Griffith (2006) emphasized the importance of conducting researches that should approach food handlers' behaviors and their links with food safety organizational culture, and the importance of food safety management systems.

Food Safety Training

Taylor and Taylor (2008) emphasized that on-the-job and off-the-job training which are given to all employees and focusing on food safety and quality issues, represent a core issue in food production areas. However, food service employees do not receive enough food safety and quality training (Worsfold and Griffith, 2003). Reasons for ineffective training vary and include, e.g. lack of: time, follow-up, incentives, and management support through training (Taylor et al., 2005 cited by Tews and Tracy, 2009). Training (i.e. a college course in food hygiene and preparation) plays a significant role in providing well-qualified chefs, since awareness of all details in food safety leads to provide a consistent level of food quality and safety (Pratten, 2003 and Walker, 2008). In terms of the benefits of food safety training provision, Knowles (2002) stated various benefits, e.g. satisfied customers; good reputation and therefore increased business; increased shelf-life of products; compliance with legislative and regulation requirements; good working conditions; higher staff morale, thus lower staff

turnover. He also proposed the potential risks from poor standards of food safety such as:

- Food poisoning outbreaks potentially lead to serious illness or even death.
- Legal action and a risk of closure.
- Fines and costs of legal action.
- Loss of business and bad reputation.
- Food contamination.
- Pest infestation.
- Wasted food due to spoilage/infestation.
- Increased cost of production/cost of alternative production.
- Lower staff morale and higher staff turnover.

The World Health Organization (2005) reported that Egypt provides an epidemiology training program in operation since 1992. As a result of serious foodborne illness outbreak on a cruise ship in 1996, Egypt launched a program on vessel sanitation which has been extended to include hotels and restaurants. Disease surveillance has seriously been addressed since 1999, however its implementation is challenging due to the great number of vertical programs, limited laboratory capacity and widespread underreporting. Alberta Workforce Essential Skills and Alberta Restaurant Food Service Association (2004) implied that food establishments are struggling with food safety training constraints such as: lack of time, the rigid production cycle, high staff turnover, accessibility and convenience of training, availability of course offerings, cost burdens to employers and employees, language and essential skills limitations and effective communication. Proprietors of the food business are required to ensure that food handlers are provided with sufficient food safety knowledge and

training, then food handlers must put those principles and skills into practice to comply with the regulations (Knowles, 2002).

Methodology

Exploring individuals' behaviors and attitudes relating to specific matters represent one of the commonly-used topics in survey research (Alreck and Settle, 2004). Although attitudes would last several weeks, months, or even years; people may change their attitudes when they receive different information or experiences. Veal (2006) indicated that in order to recognize individuals' attitude towards a specified issue, it is recommended to use attitude sentences anchored by Likert scales indicating their degree of agreement with that issue. Therefore, it has been decided to use staff attitude questionnaire for the current study to ascertain the attitudes of food handlers towards key-aspects relating to food safety in hotels.

Population of the research included four and five star hotels in Greater Cairo in Egypt. Respondents encompassed food handlers who work in food production and service areas in the hotels surveyed. The purposive sampling technique was adopted in selecting the sample of four and five star hotels. In terms of purposeful sampling, researchers purposefully select specific respondents who have experience in a particular issue to be explored and studied (Creswell and Clark, 2007). It is also called judgment sampling that is the deliberate choice of an informant due to the qualities the informant possesses. It is a nonrandom technique that does not need underlying theories or a set number of informants (Teddlie and Yu, 2007).

Fifteen five star hotels in Greater Cairo were approached to distribute 648 attitude questionnaires to food handlers. The number of received forms was

396 which represent 61% of distributed questionnaires. The invalid attitude questionnaires were 27 out of 396 received forms that represented 7% of the received questionnaires, since the valid attitude questionnaires were 369 representing 57% of the distributed questionnaires. All respondents worked in the food production and service areas in these hotels.

The study also approached eight four star hotels in Greater Cairo, Egypt. A total of 149 staff attitudes questionnaires were distributed. The number of received forms was 67 which represent 45% of distributed questionnaires. The invalid attitude questionnaires were three out of 67 received forms that represented 4% of the received questionnaires, since the valid attitude questionnaires were 64 representing 43% of the distributed questionnaires. All respondents worked in the food production and service areas in these hotels.

Data analysis has been conducted using the Statistical Package for Social Sciences (SPSS) version 18. Appropriate statistical analyses such as frequencies, Pearson correlation coefficient, ANOVA, and Cronbach's Alpha were used to achieve the aims of the research.

Findings and Discussion

The staff attitude questionnaire investigated the impact of food safety training on improving food handlers' behaviors and knowledge. Also, it detected differences among educational levels of food handlers & food safety behaviors and food handlers' work experience & food safety behaviors. The results are discussed with regard to food safety training provided in the industry.

Table 1: Reliability statistics for 433 staff attitude questionnaires distributed

Research Tools	Cronbach's Alpha
Staff Attitude Questionnaire	0.93

Bryman and Bell (2007, p.40) stated that *"reliability is concerned with the question whether the results of the study are repeatable"*. Pallant (2007) confirmed that if the Cronbach's Alpha is above 0.7, the scale of the sample will be reliable. The reliability test has been conducted using SPSS program and the Cronbach's Alpha coefficient that was found to be 0.93 as illustrated in Table 1 for all staff attitude questionnaires in the hotels surveyed. This means that the reliability has been achieved and the scale has been recognized reliable with the sample.

Males represented 350 (95%) out of 369 forms received from the 15 five star hotels and 64 (100%) out of 64 forms received from the eight four star hotels. There is a variety in food handlers' ages in five and four star hotels. A total of 318 (86.2%) and 54 (84.4%) of respondents in five and four star hotels respectively, aged from less than 19 to 44 years. It means that the majority of food handlers were young. It has been noted also that there was a variety in food handlers' experiences in five and four star hotels. This variety in ages and experiences of food handlers helps in the application of HACCP or ISO 22000 systems effectively. In terms of food handlers' educational levels in five star hotels, it has been reported that 243 (65.8%) food handlers graduated from primary school to secondary school or educational institutions and colleges other than tourism and hotels specialty. A total of 124 (33.6%) food handlers graduated from tourism and hotels institution and colleges. Only 2 (0.3%) food handlers had a Master degree. In the four star hotels, a total of 39 (61%) food handlers graduated from

primary, secondary school, institutions and colleges other than tourism and hotels institutions and colleges. Only 22 (34.4%) food handlers graduated from tourism and hotels institutions and colleges. Only 3 (4.7%) food handlers had a Master degree. The low educational levels and non specialized educational food handlers represented 65.8% and 61% of the respondents in five and four star hotels respectively.

Almost all respondents, i.e. 366 (99.2%) in five star hotels and 64 (100 %) in four star hotels have been given food safety and hygiene training. This disagrees with the study of Bas et al. (2007) who found that only 31% of employees in food businesses have been given basic food hygiene training. A total of 366 (99.2%) and 64 (100%) of respondents in five and four star hotels respectively were trained on HACCP system. On the other hand, 305 (82.7%) and 50 (78.1%) of respondents in five and four star hotels respectively were given training on ISO 22000.

It has been found that 177 (48%) and 37 (57.8%) of respondents in five and four star hotels respectively were not retrained on food safety programs regularly. This implies that four star hotels are worse than five star hotels in recognizing the importance of food safety retraining for food handlers.

It has been found that 163 (44.2%) food handlers in five star hotels were mentioning that they gained the skills of food safety in medium term, i.e. 4-6 months. In contrast, 37 (57.8 %) food handlers in four star hotels mentioned that they acquired food safety skills in short term, i.e. 6-8 weeks. This means that food and beverage management in five star hotels should do more effort in monitoring the application of food safety training courses to improve food safety behavior rapidly.

The results revealed that in five star hotels, food and beverage management relied on external and accredited food safety training courses as the first two types chosen by 293 (79.4%) and 280 (75.9%) of respondents, respectively. These courses were provided by specialized trainers. In terms of the types of training given, they were relying on the "*on the job training*" and internal training as to support the external training. Whereas in the four star hotels, food and beverage management relied on accredited food safety training courses as the first type was chosen by 50 (87.1%) respondents. These courses were provided by the tourism ministry free of charge. In terms of the types of training provided, they were found depending on the external training as to support the accredited courses.

In five and four star hotels, findings indicated that there were failures in the application of personal hygiene practices. Thus, food handlers represented a crucial cause of spreading food infection or poisoning to guests and customers through food served. These results agree with Balzaretti and Marzano (2013) and Ersun et al. (2006) who indicated that proper food safety practices were overlooked in many food businesses. It has been noted also that there were failures in the application of cross contamination and sanitation practices of food handlers in both five and four star hotels; however it was worse in four star hotels. These failures led to spreading of bacteria to food through food handlers. Failures in the application of food production time and temperature practices have been apparent in both five and four star hotels. These failures had a negative impact on HACCP or ISO 22000 proper applications; however these failures were worse in four star hotels.

Table 2: Correlation between Food Safety Training Programs, Monitoring on the Impact of these Courses and Improving Food Handlers' Knowledge about HACCP and ISO 22000

Correlation between types of food safety training programs, monitoring on the impact of these training and improving food handlers' knowledge about HACCP and ISO 22000	Improving food handlers' knowledge about HACCP and ISO 22000			
	Five star hotels (N= 369 food handlers)		Four star hotels (N= 64 food handlers)	
	Pearson correlation	Sig.	Pearson correlation	Sig.
Types of food safety training programs, monitoring on the impact of these training courses	0.402**	0.000	0.325**	0.009

**Correlation is significant at the 0.01 level

Table 3: The Correlation between Food Safety Training Programs, Monitoring on the Impact of these Courses and Application of Food Safety Practices by Food Handlers

Application of food safety practices by food handlers	Types of food safety training programs, monitoring on the impact of these training			
	Five star hotels (N= 369 food handlers)		Four star hotels (N= 64 food handlers)	
	Pearson correlation	Sig.	Pearson correlation	Sig.
The application of HACCP and ISO 22000 policies	0.381**	0.000	0.445**	0.000
Personal hygiene practices of food handlers toward foodborne diseases prevention	0.259**	0.000	0.033	0.794
Cross contamination prevention and sanitation practices	0.320**	0.000	0.130	0.306
Safe food receiving, storage, thawing, cooking and reheating practices	0.273**	0.000	-0.084	0.508
Food handlers follow up of food production time and temperature practices	0.282**	0.000	0.168	0.184

** Correlation is significant at the 0.01 level

A correlation was found between effective food safety training for food handlers concerning food safety management systems (ISO 22000, or

HACCP) in five and four star hotels and improving noticeably their food safety knowledge. The Pearson correlation value between these variables was 0.402 and 0.325 in five and four star hotels, respectively. These values are significant at a 0.01 significance level as illustrated in Table 2. This indicates that providing food safety training courses to food handlers and food and beverage management who monitor the impact of these courses affect positively the improvement of food safety knowledge for food handlers.

The findings also confirmed that in five star hotels there was a correlation between effective food safety training for food handlers concerning food safety management systems (ISO 22000, or HACCP) and improving noticeably, their food safety behaviors through dimensions four to eight. The Pearson correlation values of these dimensions were 0.381, 0.259, 0.320, 0.273, and 0.282. These values are significant at a 0.01 significance level as shown in Table 3. This indicated that providing food safety training courses to food handlers and food and beverage management who monitor the impact of these courses affect positively the improvement of food safety practices of food handlers in the dimensions from four to eight. In four star hotels, there was a correlation between effective food safety training for food handlers concerning food safety management systems (ISO 22000, or HACCP) and the application of HACCP and ISO 22000 policies only (dimension four). The Pearson correlation value was 0.445 that is significant at the 0.01 significance level as shown in Table 3. This means that the food safety training programs and monitoring are not effective to improve food handlers' practices in dimensions from five to eight in four star hotels. This indicates that food and beverage management in four star hotels should

change its culture and believes towards improvement of food safety practices of food handlers through training.

Table 4: ANOVA Test to Clarify Differences between Educational Levels of Food Handlers in five and four star hotels on their Food Safety Behavior

Five star hotels N= (369 Food handlers)					
Differences between educational levels of food handlers in their food safety behavior	**Sum of squares**	**df**	**Mean square**	**F**	**Sig.**
Between Groups	5436.26	7	776.61	1.75	0.09
Within Groups	159408.23	361	441.57		
Total	164844.49	368			
Four star hotels N= (64 Food handlers)					
Between Groups	1843.02	6	307.17	1.38	0.23
Within Groups	12654.98	57	222.01		
Total	14498	63			

Differences are significant at the 0.05 level

Also, the results reported that there is no statistical significant difference between educational levels of food handlers in five and four star hotels on their food safety behavior. The F value was found to be 1.75 and 1.38 in five and four star hotels, respectively, that is significant at 0.09 and 0.23 for five and four star hotels, respectively. These results confirm what has been stated by Kibret and Abera (2012) that educational programs aimed to improve the attitude of food handlers of low educational level as outlined in Table 4.

The results confirmed that there was no statistical significant difference between work experiences of food handlers in five and four star hotels and their food safety behavior. The F value was found to be 1.81 and 1.99 in five and four star hotels, respectively, that is significant at a 0.09 significance level as shown in Table 5.

Table 5: ANOVA Test to Clarify Differences between Work Experiences of Food Handlers in five and four star hotels on their Food Safety Behavior

Five star hotels N= (369 Food handlers)					
Differences between work experiences of food handlers in their food safety behavior	**Sum of squares**	**df**	**Mean square**	**F**	**Sig.**
Between Groups	4813.55	6	802.25	1.81	0.09
Within Groups	160030.94	362	442.07		
Total	164844.49	368			
Four star hotels N= (64 Food handlers)					
Between Groups	2131.14	5	426.22	1.99	0.09
Within Groups	12366.85	58	213.22		
Total	14498	63			

Differences are significant at the 0.05 level

Conclusion and Recommendations

This study indicated that the low educational levels and none specialized educationally food handlers in five star hotels and four star hotels affected negatively the quality and safety of food prepared and served. Almost half of respondents in five and four star hotels were not retrained on food safety programs regularly. The five star hotels also agreed with four star hotels in terms of relying on motivating manners to engage food handlers rather than providing financial rewards. On the other hand, four star hotels used internal monitoring methods more than external audits to monitor the impact of food safety training on changing the bad food safety behavior for food handlers to good behavior. These internal monitoring methods were not applied efficiently as an external audit because four star hotels did not designate or hire a food safety or quality manager to audit the impact of food safety training in contrast to the five star hotels. Additionally, food handlers in five star hotels were found to be gaining the skills of food safety in medium term, i.e. 4-6 months, compared to food handlers in four star hotels who found acquiring food safety skills in short term, i.e. 6-8 weeks. This

indicates that food and beverage management in five star hotels should do more effort in monitoring the application of food safety training courses to improve food safety behavior rapidly.

Five star hotels agreed with four star hotels in providing various training courses to improve food safety standards. Four star hotels relied on the internal food safety training more than the external training in contrast to five star hotels. This led to the absence of training plans for food handlers by food and beverage and training management or a training budget for them in four star hotels. In five star hotels, although 99.2% and 82.7% of respondents attended HACCP and ISO 22000 training, respectively, the average knowledge scores of respondents were 79.9% and 62.6%, respectively. The average knowledge score about HACCP was more than the average score of ISO 22000 by 17.3%. This indicated that food and beverage management was more interested in HACCP than in ISO 22000.

There were failures in the application of all personal hygiene practices in five and four star hotels. The application of these practices was worse in four star hotels. These failures also led to the spread of bacteria to food through food handlers. Additionally, there were failures in the application of food receiving, storage, thawing, cooking and reheating practices. These failures affected negatively HACCP and ISO 22000. This also indicates that the application of these practices is worse in four star hotels. Moreover, there were failures in the application of food production time and temperature practices. These failures affected negatively HACCP or ISO 22000 applications. This also means that the application of these practices in four star hotels is worse. It has been also noticed that there were significant correlations among effective food safety training and improving food safety

knowledge and behaviors and no significant differences existed among food safety behaviors and both educational levels of food handlers and food handlers' work experience. The findings of this study could be useful for hotels to be more careful about improving their food handlers' safety practices through providing effective food safety training to enhance food handlers' attitudes and knowledge towards food safety. The following recommendations have been suggested as a contribution to the industry to improve hotels food handlers' safety practices. Five and four star hotels should:

- Decrease levels of food handlers' turnover and reliance on temporary personnel in food production and service.
- Start to apply ISO 22000 and HACCP application; train food handlers on them effectively; monitor their impacts.
- Develop ISO 22000 and HACCP training courses.
- Repeat food safety training programs for food handlers regularly to improve their food safety knowledge and behavior and have food safety training records for them.
- Monitor the application of good personal hygiene practices by food handlers effectively.
- Monitor the application of cross contamination prevention and sanitation practices and food production time and temperature practices effectively.

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